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ABSTRACT

One hundred forty-three seventh-grade students were assessed in the areas of word attack and comprehension. This study focused on the 71 students with the lowest total word-attack scores. Results indicated that all comprehension subskills had strong relationships to overall comprehension, but that many word-attack subskills had only low, nonsignificant relationships with overall word attack. Major groupings of comprehension skills had low, significant relationships with various major groupings of word-attack skills. The results suggest that testing of various word-attack skills may be unnecessary at postelementary levels, especially in a group situation. (Author/AA)

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The Relationship Between Word Attack and Comprehension

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The purpose of this study was to evaluate the degree of relationship between Word Attack and its subskills and Comprehension and its subskills as measured by the Design for Reading: secondary, Placement test (pilot edition).[1] The focus was on subjects who scored in the lower-half of their group on the Word Attack subtest.

Currently, much attention continues to be directed towards the status of reading instruction in American Schools. One problem that seems evident is the question of how one deals with the reading problems of post-elementary students. Even a cursory view of past programs and their results provides a vivid picture that we just aren't "there" yet. A current program under development by National Computer Systems of Minneapolis attempts to ascertain specific deficiencies of post-elementary students based upon the theory that " . . . mastery of certain subskills may be required for mastery of some other selected skills."[2] Two of the three areas assess in the program are Word Attack and Comprehension skills.

Whether comprehension may be broken down into subskills has been the object of much study and debate on the part of such researchers as Davis[3], Thurstone[4], and Hunt[5] and their predecessors. Concerning research in this area Chester recently provided a summary of such research and concluded that " . . . There is widespread disagreement amongeducators, not only as to the specific subskills of comprehension, but also as to whether such subskills exist. Despite the confusion, there does appear to be a growing amount of evidence emerging in support of multiskill theory of comprehension[6]."

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In regards to the connection between decoding (word attack) ability and comprehension ability, studies by Buswell[7], Fairbanks[8], Cromer[9], Katz and Wicklund[10], and Golinkoff and Rosinski[11] among others all tend to support the conclusion that poor comprehenders have more trouble than good comprehenders in various decoding tasks.

The focus of this study was on the relationship of various comprehension subskills to word attack subskills of students who were in the lowest 50 per cent of their group in terms of word attack skills. Among others, this study evaluated the relationship between word attack skills and comprehension of word, sentence, paragraph, and sequence skills.

METHOD

Subjects

The total seventh grade poulation (n=143) of Lincoln Junior High School, La Crosse, Wisconsin served as subjects initially. La Crosse, Wisconsin has a population of approximately 48,000. Lincoln JHS is one of three public JHS and its students originate from white middle-class backgrounds. While all 143 students were tested, only the lower half (n=71), in terms of Word Attack performance, were utilized in this study.

Instrument

All subjects were administered the pilot edition of the Design for Reading: secondary Placement Test - subtest Word Attack and Comprehension (See Table 5). The Study Skills subtest was not administered due to time restrictions and lack of application in this study.

The Placement test is used to estimate post-elementary students' reading achievement in the areas of word attack, comprehension, and special (map,graph,

and table) skills. Further description of the tests follows:

> The subtests of the Placement test, pilot edition, are criterion-referenced. Reading skills have been identified and behavior objectives have been stated for each skill. . . . the tests have been constructed to measure these skills, thus the content validity of the tests may be inferred. A preliminary version of the Placement test, pilot edition, was tried-out in an industrialized port city in a midwestern state. The school district has a population of approximately 135,000 people, covers a wide range of socioeconomic status and includes approximately a 6 per cent native American and Black minority. The test was administered to 503 ninth grade students, the entire class, of a junior high school The responses to the test were (1) recorded by the students on a standardized answer form; (2) key-punched on computer cards which were verified for accuracy; and (3) computer analyzed by the University of Wisconsin Research and Development Center, staff personnel, at the R & D Center.
>
> Item analysis was done to check the validity of individual items. Items with a low estimate of validity were eliminated or revised. The data were furhter analyzed to estimate the internal consistancy of both the Word Attack and the Comprehension areas of the test. Two different estimates of reliability were used for each test , the Hoyt Estimate of Reliability and Cronbach's Alpha. Analysis of the data revealed reliability estimates of .93 and .76 for the Word Attack area and .76 and .73 for the Comprehension area.[12]

Design

The Word Attack and Comprehension subtests of the Design for Reading: Secondary Placement test were administrated to the total seventh grade population (n=143) of a junior high school. All tests were administrated by one of the writers of this report over a two day period during October, 1976. The responses to the test were (1) recorded by the students on a standardized answer form; (2) broken down by skill areas, scored, and transferred to key punch sheets by two graduate assistants in reading; (3) key-punched on computer cards; and (4) computer analyzed by the University of Wisconsin - La Crosse Computer Center.

The lower half of the total group (71/143), in terms of total scores in Word Attack, was sorted out by computer and their responses served as the basis

TABLE I
Lower Half(40 males, 31 females)

VARIABLE	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	1.00																		
3	.42*	1.00																	
4	.10	.20	1.00																
5	.05	.09	-.09	1.00															
6	.23	.23°	.06	-.10	1.00														
7	.34*	.28°	.27°	-.06	-.04	1.00													
8	.54*	.25°	.08	-.09	-.04	.18	1.00												
9	.16	.05	-.10	-.10	-.02	-.11	.10	1.00											
10	.76*	.27°	-.19	-.00	.18	.02	.20	.02	1.00										
11	.24°	.72*	.37*	.04	.17	.15	.14	.18	.05	1.00									
12	.37*	.75*	.21	.10	.36*	.11	.28°	.12	.18	.54*	1.09								
13	.39*	.72*	.13	.07	.16	.33*	.31*	-.08	.23	.42*	.54*	1.00							
14	.37*	.64*	.27°	-.01	.22	.42*	.15	-.05	.25°	.45*	.35*	.31*	1.00						
15	.14	.56*	.00	.14	.08	.08	.06	-.03	.08	.26°	.32*	.22	.34*	1.00					
16	.23	.69*	-.06	.04	.01	.07	.12	.10	.27°	.37*	.35*	.46*	.23	.18	1.00				
17	.24°	.32*	.54*	.49*	.62*	.09	-.03	-.13	.01	.34*	.41*	.22	.28°	.14	-.01	1.00			
18	.60*	.33*	.15	-.13	-.06	.59*	.77*	.45*	.14	.25°	.29°	.33*	.29°	.06	.16	-.03	1.00		
19	.43*	.83*	.19	.09	.30°	.25°	.34*	.02	.23	.54*	.88*	.88*	.37*	.31*	.46*	.36*	.35*	1.00	
20	.32*	.73*	.17	.08	.18	.31°	.12	-.05	.20	.44*	.41*	.32*	.82*	.81*	.25°	.26°	.22	.42*	1.00

* significant ($p < .01$)
° significant ($p < .05$)

Table II

Placement Test

Skill	No. of items
I Word Attack	
Consonants	
Blends	5
Digraphs	5
Silent Consonants	5
Structural Analysis	
Base Words: Affixes	5
Syllabication	5
Possessives	5
Vowels	12
	(total 42)
II Comprehension	
Context Clues	5
Sentence: Detail	4
Sentence: Paraphrase	4
Selections: Main Idea	4
Selections: Relationships & Conclusions	4
Sequence	8
	(total 29)
Special Skills	
Maps	11
Graphs	4
Tables	6
	(total 21)
	Total 92

of this study. Utilizing the statistical method, Pearson product-moment correlation, values of the correlation coefficient r were calculated for the following 19 variables obtained by breaking down the subtests by skill areas. The variables are numbered 2-20:

Variable	Description	Variable	Description
2	Word Attack	12	Sentence:Detail
3	Comprehension Total	13	Sentence:Paraphrase
4	Consonant Blends	14	Selections:Main Idea
5	Consonant Digraphs	15	Selections:Relationships & Conclusions
6	Silent Consonants	16	Sequence
7	Base Words:Affixes	17	Variables 4,5, and 6 Combined (consonants)
8	Syllabication	18	Variables 7,8, and 9 combined (structural analysis)
9	Possessives		
10	Vowels	19	Variables 12 and 13 combined (sentence)
11	Context Clues (word)	20	Variables 14 and 15 combined (paragraphs)

RESULTS AND ANALYSIS

An intercorrelation matrix was compiled on the basis of the total lower-half group of 71 subjects (see Table I), Table II lists the skills tested and number of items per skill. Means and standard deviations for each variable are listed in Table III.

TABLE III

Variable	Mean	S.D.	Variable	Mean	S.D.
2	33.887	3.548	12	3.000	1.070
3	19.817	4.606	13	2.338	1.055
4	4.620	.641	14	2.901	1.111
5	4.521	.695	15	2.155	1.078
6	4.338	.736	16	5.254	1.491
7	4.211	.955	17	13.479	1.145
8	3.563	1.144	18	12.310	1.810
9	4.535	.808	19	5.338	1.867
10	8.141	2.174	20	5.056	1.788
11	4.197	.920			

All correlations were checked as to either .01 or .05 levels of significance and so noted in Tables I.[13]

Variable 4 (blends), 5 (digraphs), 6 (silent consonants), and 9 (possessives) seem to have low nonsignificant relationships to total Word Attack. Variable 7 (base words: affixes), though significantly related, only shows a low correlation. On the other hand, variables 8 (syllabication) and 10 (vowels) show significant moderate and high relationships respectively. When one considers the major skill groupings of Word Attack, both 10 (vowels) and 18 (structural analysis) skills show reasonable expected relationships whereas 17 (consonants) does not.

All comprehension variables 11-16 show significant moderate and high correlations with overall comprehension. Overall Word Attack only gives evidence of a moderate relationship with overall Comprehension.

In examining individual word attack subskills, 4 (blends), 6 (silent consonants), 7 (base words: affixes), 8 (syllabication), and 10 (vowels) show significant though low relationships with comprehension subskills while only variables 6, 7, 8, and 10 show significant relationships with overall comprehension (3).

An examination of 11 (context clues), 19 (sentences), 20 (selections), and 16 (sequence), the main skill areas in comprehension tested and 10 (vowels), 17 (consonants), and 18 (structural analysis), the main skill areas in Word Attack tested, reveals the following:

a) Context clues (11) and sentences (19) are significantly related to all major groupings of Word Attack skills except vowels (10) though the relationships are low.

b) Selections (20) has a low significant relationship with consonants (17) only.

c) Sequence (16) has a low significant relationship with only vowels (10) in the major Word Attack groupings.

CONCLUSIONS

Results of this study did not seem to support preconceived expectations of the researchers. Based upon previous research by Benz and Rosemier[14], Golinkoff[15], and Marzano et al.[16], it was expected that Word Attack skills would have shown much higher relationships with Comprehension skills. Instead, it was found that some word attack skills (consonants) showed unexpected low nonsignificant relationships with total Word Attack. Further investigation might show that testing of this aspect might be unnecessary at post-elementary levels on a whole group basis.

As a final conclusion, it is recommended that since mean scores for individual variables were quite high, similar studies should focus on the lower QUARTER rather than the lower HALF of post-elementary populations since lower means and greater variances might be expected and relationships among variables might be changed.

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